ANNUAL ADMINISTRATIVE REPORT (FY 2005) AND

WORK PLAN (FY 2006) FOR INVENTORIES AND VITAL SIGNS MONITORING

FY2005-FY2006

MID-ATLANTIC NETWORK (MIDN)

Appomattox Court House NHP (APCO), Booker T. Washington NM (BOWA), Eisenhower NHS (EISE), Fredericksburg and Spotsylvania NMP (FRSP), Gettysburg NMP (GETT), Hopewell Furnace NHS (HOFU), Petersburg NB (PETE), Richmond NBP (RICH), Shenandoah NP (SHEN) (Prototype Park), Valley Forge NHP (VAFO)

Mid-Atlantic Network Approval Signatures

Russ Smith — Date
Superintendent, Fredericksburg & Spotsylvania National Military Park

Elizabeth Johnson — Date
Inventory and Monitoring Coordinator, Northeast Region

James Comiskey — Date
Mid-Atlantic Network Coordinator

Mid-Atlantic Network
Summary of Major Network Accomplishments and Public Interest Highlights for FY 2005

Mid-Atlantic Network – The Mid-Atlantic Network (MIDN) is comprised of 10 parks located in Pennsylvania and Virginia: Shenandoah NP (SHEN) (a Prototype Park), Booker T. Washington NM (BOWA), Richmond National Battlefield Park (RICH), Appomattox Court House NHS (APCO), Petersburg National Battlefield Park (PETE), Fredericksburg and Spotsylvania NMP (FRSP), Gettysburg National Military Park (GETT), Eisenhower National Historic Site (EISE), Hopewell Furnace NHS (HOFU), and Valley Forge National Historical Park (VAFO).

During FY 2005, the network continued biological inventories and compilation of existing park data to reach its goal of documenting 90% of all vertebrate and vascular plant species present in the network parks. The network received start up vital signs monitoring funding in FY 2005 to begin development of a vital signs monitoring program. The data manager was hired and the network Phase 1 report was submitted. The network received its first year of water quality monitoring funding and conducted an initial review of water resources in the network parks.

Biological Inventories

Network Objectives for Biological Inventories:

- Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
- Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.
- Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.
- Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products

Throughout FY 2004, the network continued to fund ongoing data management projects that include, compiling and entering existing data, legacy data, into NPSpecies, NatureBib and the Dataset Catalog. The NPSpecies database for all parks is verified and current but there are still gaps in documentation of 90% of species. The amphibian, reptile and bird data for EISE, GETT, and HOFU have now been certified for accuracy by a taxonomic expert from Pennsylvania State University (PSU). Certification of fish inventory data for all the MIDN parks, except BOWA, was completed by James Atkinson (SHEN). We are awaiting the completion of a number of vertebrate inventories and vegetation mapping projects in the Network to add vertebrate inventory data for the VA parks and floristic (vascular plant) data from the Plots database (from NatureServe) for all network parks. Taxonomic experts have been identified to review NPSpecies for some of the parks in the Network and certification will take place as the data becomes available. A cooperative agreement with PSU to update NatureBib for the four Northeast Region Networks, including the Mid-Atlantic Network is continuing. The research associate from PSU hired to correct and update NatureBib has continued to add new records, and initiated scanning of documents for digital archiving.

Since FY 2002, Northeast Region has distributed written "product specifications" that specify formats for biological inventory and other deliverables that are received from cooperators, such as, FGDC compliant metadata for all spatial data sets, FGDC Biological Profile for all biological data sets, and

relational databases in MS Access. These were included in each cooperative agreement established for vertebrate inventories (funded by I&M, regional science or park funds) since 2002. The Coastal and Barrier Network data manager assisted and/or developed relational databases and worked with MIDN biological inventory cooperators to assure quality products at the completion of each project. Communications with Network cooperators continued in FY 2005 for inventories funded in 2002 and 2003, and indicate that all are following the product specifications. Where necessary, network and regional staff are providing support to cooperators to ensure that the standards are met.

Incoming data and reports from biological inventories are being peer reviewed for scientific content, accuracy and error. A cooperative agreement was amended with Pennsylvania State University, Dr. Richard Yahner to continue scientific peer review of incoming vertebrate inventory reports for Northeast Region Networks. Electronic databases are reviewed for accuracy and error and assistance is provided in developing FGDC compliant metadata. Currently, five reports are being finalized using these standards and will be published by December 2005.

Mammal inventories in network parks are being completed in 2005. Dr. Ron Barry, Frostburg University continued work at RICH where they have confirmed 9 of the 10 species of nonchiropteran mammals previously recorded at the park and detected an additional 12 species, making a total of 22 species. The only species previously recorded and not captured or observed in their survey work is the river otter (*Lutra canadensis*). At FRSP, they have documented 22 nonchiropteran species of mammals, including 21 species not previously listed. New records include the diminutive pygmy shrew (*Sorex hoyi*). Of particular interest is the assemblage of abundant populations of the northern short-tailed shrew (*Blarina brevicauda*), meadow vole (*Microtus pennsylvanicus*), and eastern harvest mouse (*Reithrodontomys humulis*) in several fields in the park. Dr. John Pagels, Virginia Commonwealth University completed the third year of sampling. In total, 15 species were captured at PETE (Eastern Front), 19 species at PETE (Five-Forks), 14 species at APCO, and 14 species at BOWA. Camera trapping documenting both bobcat (*Felis rufus*) and coyote (*Canis latrans*) within PETE (Five-Forks) boundaries. This brings the mammal species count to 21 at PETE, 19 at APCO, and 18 at BOWA.

Dr. Jim Hart, Pennsylvania Natural Heritage Program, initiated an inventory of bats at the four MIDN Pennsylvania parks (EISE, GETT, HOFU, and VAFO) in 2004. During 2005, twenty-one volunteers and Park staff assisted with erecting and disassembling the nets as well as processing bats and assisting with the entry of data. A maternity colony in the barn at Hopewell Furnace may be listed in the Pennsylvania Game Commission's Summer Bat Maternity Colony Survey and Database for long-term tracking. Nine specimens of the "State Rare" northern long-eared bat (*Myotis septentrionalis*) were captured including six at HOFU and three at VAFO indicating that habitat may be adequate to support this species. During the spring of 2005, two female Indiana bats were radio tracked traveling through the GETT on migration to two summer sites in Maryland. Further studies will be carried out during 2006 under another separate grant to try and understand whether this species "stops over" in GETT during these migrations. A program on bats in general and the work being carried out at the various parks involved with this project was given at the Mill Grove Audubon Sanctuary, enhancing outreach activities related to natural resource at the parks.

Dr. Richard Yahner, Pennsylvania State University, conducted inventories at VAFO including herpetofauna and small mammals of the asbestos release sites, biotic inventory in the newly acquired Schwoebel Tract (Wagonseller Farm), and a mammal inventory of the park. Results do not suggest that species richness or abundance of herpetofauna and small mammals are lower in asbestos-contamination areas compared to reference areas elsewhere in the park. In fact, some species of snakes

appeared to be more abundant in asbestos-contamination areas, perhaps because mowing is not permitted in grasslands there. Four birds of conservation concern (American woodcock, willow flycatcher, wood thrush, and Louisiana waterthrush) were documented during the spring or summer survey seasons at the Schwoebel Tract, suggesting that this area of the park might provide habitat for breeding individuals of these species. Observations of big brown bat, coyote, and feral cat represent new records for VAFO. Feral cats have been confirmed to reside within the park boundary and may pose a potential management issue at VAFO.

Bird inventory field work for the VA parks has been completed under a cooperative agreement with the Center for Conservation Biology at the College of William and Mary. Dr. Dana Bradsaw has searched for and cataloged all verifiable records of birds occurring within park boundaries, developed an expected species list for each park and conducted targeted avian inventories to fill information gaps at APCO, BOWA, PETE, RICH and FRSP. Final species count include 94 species at APCO, 96 at BOWA, 118 at FRSP, 136 at PETE, and 142 at RICH . Final reports are in various stages of preparation and peer review, and we expect to receive the final deliverables in FY 2006.

Through a cooperative agreement with Dr. Joseph Mitchell, University of Richmond, herpetological inventories at FRSP, RICH, BOWA, PETE and APCO began in October 2002 and were completed in July 2004. A total of 17 species of amphibians and 13 reptiles have been documented for APCO, 9 and 9 for BOWA, 21 and 21 for FRSP, 20 and 27 for PETE, and 23 and 21, respectively, for RICH. New county records and range extensions for several species, mostly frogs and salamanders, have been documented: two species of frogs new to Henrico County, Virginia, were documented in the Fort Harrison unit of RICH, one species of frog and two species of salamanders have been newly documented for the Piedmont Physiographic Province and Dinwiddie County, Virginia, in the Five Forks unit of PETE, a salamander of special interest in Virginia, the rarely-seen mole salamander, was documented for APCO and a frog of special interest in Virginia, the carpenter frog, was documented for the Stonewall Jackson Shrine in FRSP. Final reports are in various stages of preparation and peer review, and we expect to receive the final deliverables in FY 2006.

Final fish sampling at BOWA was conducted by SHEN staff. The spring spawning migration of redhorse suckers (*Moxostoma*) within Gills Creek at Booker T. Washington National Monument is unique within the Mid Atlantic Network. The two most dominant species within Gills Creek, notchlip redhorse (*Moxostoma collapsum*) and V-lip redhorse (*Moxostoma pappillosum*) are at the northern extent of their geographic range within Virginia in the Roanoke Drainage. Two additional redhorses, golden (*Moxostoma erythrurum*) and shorthead (*Moxostoma macrolepidotum*) are also present in the annual spring spawning migration within the stream. During the peak of the migration in April, over 300 large adults of all four species were present within the section of Gills Creek that flows through the park. The park section of Gills Creek also has six other sucker species (*Catostomidae*) including the globally rare bigeye jumprock (*Scartomyzon ariommus*). With 10 species detected, Booker T. Washington National Monument likely contains the greatest diversity of *Catostomids* present within the entire National Park System.

Crayfish inventories by Dr. Bob Carline and Dave Lieb of Pennsylvania State University were conducted at EISE, GETT, HOFU and VAFO. Preliminary observations indicate that the invasive rusty crayfish (*Orconectes rusticus*) is present in at least three park properties in Pennsylvania (Gettysburg, Eisenhower, Upper Delaware). Another invader, *Orconectes virilis*, is also present in GETT and EISE.. Invasive crayfish appear to be particularly problematic in GETT and EISE with several streams that support high densities of invaders (mainly the rusty crayfish) completely devoid of natives. The collection of rusty crayfish from the Upper Delaware may be bad news for a species of crayfish

(*Cambarus [Puncticambarus] sp.*) that was not known from Pennsylvania prior to a survey of Valley Creek within VAFO. This is because Valley Creek is in the Delaware drainage and because of the known propensity of the rusty crayfish to extirpate native crayfishes in Pennsylvania and elsewhere. *Procambarus* was found in GETT, which is noteworthy because it represents a westward range extension of about 120 miles for the genus.

In developing an inventory study plan in 2000 and 2001, the network made a decision to spend the limited funds on vertebrate inventories and surmised that vegetation sampling plot data, as is required for vegetation classification and mapping, might substantially fill the vascular plant data gap. To that end, vegetation mapping is underway in all of the network parks. Cooperators for Network vegetation mapping over the past few years have included: 1. The Nature Conservancy, PA Science Office, PA Natural Heritage Program, 2. NatureServe, 3. Virginia Division of Natural Heritage, 4. North Carolina State University, 5. Richard Easterbrook, PETE GIS Specialist and COTR for air photos, 6. Kucera International, Inc., and 7. staff in each network park who are essential in the field operations and data review.

In Pennsylvania, the Pennsylvania Natural Heritage Program (PNHP) has completed vegetation mapping products for VAFO and HOFU; the report for HOFU has now been published while the report for VAFO is currently undergoing final review and revision. Vegetation classification sampling was completed at GETT and EISE in 2004 has now been entered into the plots database and has been crosswalked with the National Vegetation Classification System. The plot data from EISE and GETT has been analyzed, resulting in vegetation community descriptions. Thematic accuracy assessment sampling of the vegetation maps has also been completed. In the Virginia parks, the Virginia Division of Natural Heritage has entered data from the 2004 for APCO, BOWA, FRSP, PETE, and RICH, with an additional 10 quantitative plots and 223 observation points collected. A field key and vegetation description for APCO is now complete. Several unique and globally rare wetlands have been documented, including Non-riverine Saturated Forest**,** Coastal Plain Depression Wetland, and Coastal Plain/Piedmont Acidic Seepage swamp, at FRSP, and a small occurrence of Upland Depression Swamp at APCO.

Bruce Heise, Geological Resources Division, organized a geologic scoping meeting for parks in Virginia, and a separate meeting for SHEN, as part of the Geologic Resources Evaluation. In collaboration with USGS staff, current geologic maps and resources were evaluated. A paleontological resources inventory has also been initiated with additional support from GRD.

Vital Signs Monitoring

Network Objectives for Vital Signs Monitoring:

- Hire and retain professional staff and provide a safe, healthy, and productive work environment.
- Develop and maintain working and decision-making processes that engage the network board of directors, technical staff, cooperators and managers of network parks.
- Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).
- Identify and prioritize Network Vital Signs, develop protocols and implement programs to monitor these Vital Signs in Network parks.

The Mid-Atlantic Network received $225,000 start-up funding in 2005 to begin developing a monitoring program. The Network Data Manager vacancy was announced and Kristina Callahan was

selected in May 2005 from among the eligible candidates. The network formed its Science Advisory Committee (SAC) composed of experts familiar with the MIDN parks and natural resource priorities. The first SAC meeting was held in July 2005 to provide direction to the network in developing its conceptual models. The network and SHEN staff held numerous meetings in 2005 to identify areas of collaboration and integration between the two programs. A SHEN Conceptual Ecological Model workshop was held in the park in May 2005.

During 2005, the Network Coordinator conducted several site visits to the network parks. Visits were coordinated with the Natural Resource staff at each park, and focused on continuing to gather information on park natural resources, management issues and threats, current projects, and potential vital signs. The coordinator continued to compile information for the network library, including general management plans, resource management plans, strategic plans, and various reports. With the assistance of Carolyn Davis, NNL Coordinator based at GETT, this information was used to develop park profiles that were reviewed and approved by park resource managers.

The MIDN completed its Phase 1 report as part of the Monitoring Plan. The plan focuses primarily on the justification and need for monitoring, the natural resource priorities and threats to each park, a review of current and historical monitoring, and a series of conceptual ecological models for aquatic and terrestrial ecosystems of the MIDN. Network staff also provided assistance to the NETN in support of the Appalachian Trail vital signs selection and forest health monitoring program.

Northeast Region I&M staff continue to assist park resource managers as information becomes available to identify and review existing natural resource studies and data sets for network parks; analyze, consolidate and synthesize this information to identify the natural resource characteristics and conditions in the context of each park's purpose and mission; identify issues and opportunities that should be addressed during the GMP process; identify critical gaps in the knowledge base which must be addressed prior to initiating the planning process; identify usable natural resource data to better inform the GMP process; present the results of this work to park planners and managers in a way that is understandable and useable in the park planning and management process(s); and identify a cadre of knowledgeable natural resource professionals that would continue in an advisory role during each park's planning process. Specifically, during 2005, the Network Coordinator has worked with VAFO and regional staff to provide scientific support for the vegetation management plan.

In support of data management of MIDN and Northeast Region I&M, NCSU has worked with cooperators and contractors to assure that natural resource inventory data are georeferenced according to national standards and are spatially consistent with GIS data for the corresponding parks. Specifically for MIDN vertebrate inventories of the PA parks, NCSU has verified GIS vector data, reviewed tabular data for completeness and internal consistency, verified that complete, FGDC compliant metadata exists and created biological metadata for each dataset, constructed Microsoft Word formatted data dictionaries for each dataset, reviewed orthophotos created by others and creating digital orthophoto mosaics for the VA parks and GETT and EISE, and developed vegetation map data review procedures. NCSU will compile and distribute base GIS data for the MIDN in FY2006. A cataloging and archiving system for I&M data, including digital orthophoto mosaics is currently being developed and implemented.

Through a cooperative agreement initiated by the MIDN with the Patuxent Wildlife Research Center, USGS, a study was initiated in 2004 to develop a sampling design for evaluating the long-term contribution of cultural parks to the conservation of grassland and shrubland birds, focusing primarily on the MIDN, the Eastern Rivers and Mountains Network (ERMN), and the National Capital Region

Network (NCRN). National battlefields and other cultural parks can play an important role in the conservation of grassland birds in the Mid-Atlantic Region. These parks are managed to maintain landscapes that existed at the time of the historic events, landscapes that frequently include sizable tracts of grasslands. Species including Bobolinks, Grasshopper Sparrows, and Eastern Meadowlarks can greatly benefit from grassland management activities in these parks that are sensitive to their habitat and ecological requirements. To date, the project has evaluated grassland habitats at GETT to determine the suitability of current habitat to grassland birds.

A cooperative project with the Leetown Science Center, USGS, has been initiated to determine reference or desired conditions for different wetland types, identify potential ecological indicators that best characterize the ecological integrity of different wetland types, and document the major threats to wetlands and how these impacts be identified using rapid ecological assessment methods. In 2005, discussions and initial scoping was conducted to identify the parks that would be used to implement field activities in 2006.

Water Quality Monitoring

Network Objective for Water Quality Monitoring:

- Integrate water quality monitoring in the Network Vital Signs monitoring plan.

In FY 2005, the network received it first year of funding to develop a water quality monitoring plan. The network established a cooperative agreement with the Department of Environmental Sciences, University of Virginia, to develop a water quality monitoring plan following the phased reporting of the I&M Program. As part of the Phase 1 report, a compilation of existing information related to water quality of MIDN parks was completed, including a review and summary of existing information on anti-degradation and outstanding waters, compile USGS stream gauge data, and review and summarize existing watershed assessments. The water quality scoping report was completed and submitted as part of the MIDN Phase 1 report.

Public Interest Highlights (MIDN 2005)

Spring spawning of redhorse suckers at BOWA

Gills Creek at Booker T. Washington National Monument is unique within the Mid Atlantic Network in having a spring spawning migration of redhorse suckers (*Moxostoma*). At its peak, over 300 large adults of four species were present within the section of Gills Creek that flows through the park. Six other sucker species (*Catostomidae*) including the globally rare bigeye jumprock (*Scartomyzon ariommus*) occur in the park. Booker T. Washington National Monument likely contains the greatest diversity of *Catostomids* present within the entire National Park System.

Exotic crayfish invade Pennsylvania National Parks

Preliminary observations indicate that the invasive rusty crayfish (*Orconectes rusticus*) is present in at least three park properties in Pennsylvania (Gettysburg, Eisenhower, Upper Delaware). Another invader, *Orconectes virilis*, is also present in Gettysburg and Eisenhower. Invasive crayfish appear to be particularly problematic in Gettysburg and Eisenhower with several streams that support high densities of invaders (mainly the rusty crayfish) completely devoid of natives.

I. Overview and Objectives

The Mid-Atlantic Network (MIDN) includes ten parks with significant natural resources. All of the parks are located in Virginia and Pennsylvania. In October 2001, the Mid-Atlantic Network Inventory Study plan was submitted to WASO and the Network received funds in FY02 to begin implementing inventories on vertebrate and vascular plants in network parks. Vertebrate inventories are underway to address the lack of information in five of the six VA parks in the Network. The four PA parks in this network were fortunate to have received substantial funding for biological inventories prior to the establishment of I&M networks. Shenandoah National Park, a prototype park, had completed much of their inventory work prior to establishing their monitoring program, and recommended devoting the limited funds to the smaller VA parks. Although SHEN is an integral part of the Network, as a prototype, SHEN reports progress under a separate Annual Administrative Report and Work Plan.

Projects that are ongoing for 2004-2005 in the Network include, compiling and entering existing data, into NPSpecies, NatureBib and the Dataset Catalog. The NPSpecies database for all parks has been reviewed and is verified and current. The fish inventory data for the network has been certified, along with vertebrate data for the Pennsylvania parks. We are awaiting the addition of vertebrate inventory data for the VA parks and floristic data from the Plots database resulting from vegetation mapping projects prior to certifying the database. Taxonomic experts have been identified to review NPSpecies for some of the parks in the Network and that work will continue in 2006, once each park's database has been completed and all inventory data has been entered. The cooperative agreement with Pennsylvania State University (PSU) to update NatureBib for the four Northeast Region Networks, including the Mid-Atlantic Network, has been extended. The database is up to date for all network parks. The research associate from PSU hired to correct and update NatureBib has continued to update the database for each park with new documents and existing information.

Deliverables from the inventory projects funded by I&M and regional science in FY02 for the five VA Network parks, APCO, BOWA, FRSP, PETE, and RICH, are in various stages of completion and final products will be submitted in 2006. These projects were funded after the development of I&M product specifications and will comply with these guidelines. Reports are peer reviewed for content and databases are reviewed for accuracy and error.

Vegetation mapping is underway in all of the network parks. Final reports and deliverables have been submitted for HOFU which has served as an example for us to develop a review process for vegetation mapping products. VAFO vegetation mapping report is being finalized. Mapping in VA parks is continuing and has been extended due to impacts of Hurricane Isabel in 2003 and in an effort to improve on accuracy assessment procedures.

The Mid-Atlantic Network received $225,000 in start-up funding in 2005 to begin developing a monitoring program. The Network Data Manager was hired in May and is based out of the Network office at Fredericksburg and Spotsylvania NMP. The Network Coordinator continued compiling information on the network parks and identified natural resource priority issues. The network Phase 1 report was submitted, which focuses primarily on the justification and need for monitoring, the natural resource priorities and threats to each park, a review of current and historical monitoring, and a series of conceptual ecological models for aquatic and terrestrial ecosystems of the MIDN. Additional support in compiling information for the Phase 1 report has been provided by the Regional Natural Landmarks Coordinator.

Objectives

Biological Inventories

1. Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.
2. Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.
3. Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.
4. Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products.

Vital Signs Monitoring

5. Hire and retain professional staff and provide a safe, healthy, and productive work environment.
6. Develop and maintain working and decision-making processes that engage the network board of directors, technical staff, cooperators and managers of network parks.
7. Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).
8. Identify and prioritize Network Vital Signs, develop protocols and implement programs to monitor these Vital Signs in Network parks.

Water Quality Monitoring

9. Integrate water quality monitoring in the Network Vital Signs monitoring plan.

II. Accomplishments (FY2005) and Scheduled Activities (FY2006)

A. Biological Inventories

Objective 1 –Locate, catalog and archive park natural resource documents, data sets, and spatial information and ensure such information is accurate, in useable formats and readily available.

Task 1.1 – NPSpecies (all parks)

- **FY 2005 Accomplishments:** Through an existing cooperative agreement with Pennsylvania State University (PSU) a part-time research associate continued to convert and verify existing data in the Network's NPSpecies database (this position is shared between two Networks, the Mid-Atlantic and Eastern Rivers and Mountains). **(1)** New fish data was imported for all MIDN parks. **(2)** New crayfish and tree data entered for VAFO. **(3)** James Atkinson, SHEN, assisted with certification of fish data for all parks, except BOWA. **(4)** Brad Ross, Pennsylvania State University, assisted with certification of amphibian and reptile data for GETT, EISE and HOFU. **(5)** Created Appendix B: Species of Special Concern for phase one of the MIDN Monitoring Plan.
- **Scheduled FY 2006 Activities and Products: (1)** Enter new data as it becomes available for all parks in the MIDN. **(2)** Assist taxa experts with data certification on an as-needed basis for all parks in the MIDN Network including, a) fish certification for BOWA, b) amphibian and reptile certification for all Virginia parks and VAFO, c) bird certification for all Virginia parks, and d) mammal certification for all MIDN parks. **(3)** Provide assistance through data requests and document searches as needed.

Task 1.2 NatureBib (all parks)

- **FY 2005 Accomplishments:** Through an existing cooperative agreement with PSU, a full-time research associate is entering and verifying existing references in the NPS bibliographic database,

NatureBib. This is a shared position between the four Northeast Region Networks. **(1)** NatureBib reference data requests: received and fulfilled NatureBib data requests from park personnel. **(2)** Comprehensive NatureBib database editing: assessed the overall status of parks' NatureBib databases and has begun detailed editing of park databases. Park NatureBib database records are being assessed and edited for duplication, spelling, authority control, data integrity and data comprehensiveness. To date, 29 records and four MIDN park databases have been completed or are near completion. **(3) C**ompleted a draft Northeast Region NatureBib Data Management Plan and a draft Northeast Region NatureBib Data Entry Manual. **(4)** Completed cataloging and archiving the VAFO Natural Resource Management Collection. In all 1685 documents were cataloged (724 files, 11 books, 8 conference proceedings, 77 journal articles, 28 maps, 17 dissertations, 28 unpublished reports, and 791 reports). **(5)** Initiated scanning and digitizing select NatureBib documents for ERMN, NCBN, NETN, and MIDN parks. Digital versions of NatureBib documents are also being collected from a variety of online sources. **(6)** NatureBib Data Manager trained VAFO staff on NRM Collection management database.

- **Scheduled FY 2006 Activities and Products:** Continue to provide support for **(1)** NatureBib reference data requests, **(2)** comprehensive NatureBib database editing, **(3)** NatureBib data management plan and data entry manual for ERMN will be developed as model for MIDN and other networks, **(4)** MIDN document digitization and web page development to access the digital documents.

Objective 2 –Conduct inventories targeted at vertebrate and vascular plant species in the Network parks and conduct quality assurance and review of all inventory products.

Task 2.1 – Mammal Surveys (FRSP, RICH)

- **FY 2005 Accomplishments: (1)** Surveys of mammals (except bats) by a Frostburg State University (FSU) graduate assistant and undergraduate research technician were conducted at RICH, ending the survey work at this park. As a result of this activity we have confirmed 22 species of mammals at RICH, producing records for 12 new species. The MS Access electronic database for RICH was completed. **(2)** Surveys of mammals (except bats) and compilation of records (including habitat characterizations and GPS coordinates for sampling locations) in MS Access by two Frostburg State University (FSU) graduate assistants continued at FRSP. This activity resulted in the confirmation of 22 species, 21 (including the pygmy shrew, *Sorex hoyi*) of which are not listed in NPSpecies. **(3)** A progress report on inventorying activities at RICH and FRSP was submitted in January 2005.
- **Scheduled FY 2006 Activities and Products: (1)** Dr. Ron Barry will prepare a final report for RICH and work with NPS personnel to produce metadata. **(2)** The preparation of voucher specimens collected at RICH will be completed by Frostburg State University graduate student Avinash Sareen, and these specimens will be accessioned into the mammal museum at Frostburg State University. Avinash Sareen's M.S. thesis on the effects of prescribed burning on small mammal species diversity in forested habitat in GEWA will be completed. **(3)** Field work in FRSP will be completed by graduate assistants in October 2005. **(4)** Dr. Ron Barry will prepare a final report for FRSP and work with NPS personnel to produce metadata. Janet Mulligan and Cheryl Tanner will complete their M.S. theses on spatial and temporal association of the meadow vole (*Microtus pennsylvanicus*) and eastern harvest mouse (*Reithrodontomys humulis*), and distribution of ticks and prevalence of *Borrelia* in deciduous stands and among white-footed mice (*Peromyscus leucopus*), respectively.

Task 2.2 – Mammal Surveys (BOWA, PETE, APCO)

- **FY 2005 Accomplishments:** A cooperative agreement was established in FY 2002 with Dr. John

Pagels, Virginia Commonwealth University (VCU), to conduct a two-year study to determine the presence, relative abundance, and distribution of small, medium, and large mammal species at APCO, BOWA and PETE. **(1)** All mammal sampling—that included observations, live and pitfall trapping, and night cameral photography, was completed in FY 2004. All vegetation sampling had also been completed but in fall 2004 all sampling sites were visited to obtain additional data on downed woody debris. **(2)** Data entry and analyses were completed. **(3)** Draft reports were completed and submitted for each of the sites. Comments and edits on the drafts were considered, corrections and additions completed, and the penultimate drafts of the reports were submitted in summer 2005.

- **Scheduled FY 2006 Activities and Products:** Reports will be finalized and published by January 2006.

Task 2.3 – Bat Surveys (GETT, EISE, HOFU, VAFO)

- **FY 2005 Accomplishments:** A cooperative agreement was established with Jim Hart, Pennsylvania Science Office, Pennsylvania Natural Heritage Program, to conduct an inventory of bats in the Pennsylvania MIDN parks. In 2005, 16 sites were mist-netted for a total of 134 netnights during the course of the project. This work resulted in the capture of 104 bats of 5 species including 10 northern red bats (*Lasiurus borealis*), 47 little brown bats (*Myotis lucifugus*), 33 big brown bats (*Eptesicus fuscus*, 5 eastern pipistrelle bats (*Pipistrellus subflavus*) and 9 northern long-eared bats (*Myotis septentrionalis*). The maternity colony noted in the barn at HOFU was visually estimated at between 150-200 bats although all bats were most likely not seen at the time. At VAFO, a reported colony in Knox's Quarters was investigated. The amount of guano present indicated a very small population that may not have been present during this past summer. Northern long-eared bats were captured at both VAFO and HOFU with the majority (6) captured at Hopewell Furnace. This may indicate that both roosting and foraging habitat at HOFU is adequate for populations of this species to exist there. No other major summer sites were found at either VAFO or HOFU. Several barns at GETT/EISE are known to have harbored summer colonies and have been reported on previously.
- **Scheduled FY 2006 Activities and Products**: **(1)** All field data sheets will be entered into the Pennsylvania Game Commission Bat Netting and Trapping database for ease of use with ArcGIS. **(2)** All mist netting sites will be mapped onto SID views and net placement noted. **(3)** All sites investigated for summer colonies will be mapped into SID views. **(4)** A compilation of appropriate photos pertaining to the investigation will be created on CD. **(5)** Complete Draft Technical Report by 15 November, 2005. **(6)** Assemble all materials such as photos, spreadsheets and metadata for inclusion into Draft Report. **(7)** Complete article for Park Science Bulletin by November 15, 2005.

Task 2.4 – Avian Surveys (FRSP, RICH, BOWA, PETE, APCO)

- **FY 2005 Accomplishments:** Through a cooperative agreement with the Center for Conservation Biology, College of William and Mary, Dr. Dana Bradshaw completed field work in the winter of 2003/04 finishing 15 months of data collection towards a year-round inventory of birds. A team of four field technicians was used to conduct repeated rounds of sampling. Surveys were conducted from a matrix of fixed sampling points covering all habitat types within each park. Additional information was gleaned from Breeding Bird Survey data, Christmas Bird count data, and other standardized counts where available toward creating a comprehensive bird profile for each park. Draft reports are currently under review.
- **Scheduled FY 2006 Activities and Products:** Dana Bradshaw will complete draft and final reports for avian survey efforts in the five Mid-Atlantic Network (MIDN) parks. Reports will include habitat and bird inventory data for all units of each park, in addition to historical data

where available. Data will span all seasons and include aerial image maps of point locations and nomenclature. Long-term monitoring recommendations and management suggestions where appropriate will be presented for each park. Additional work will be carried out toward updating the NPSpecies database for each park and certifying data already entered. Draft and final reports are due March 1, and June 1, 2006 respectively.

Task 2.5 – Herpetological Surveys (FRSP, RICH, BOWA, PETE, APCO)

- **FY 2005 Accomplishments**: **(1)** Through a cooperative agreement with Dr. Joseph Mitchell, University of Richmond, herpetological inventories at FRSP, RICH, BOWA, PETE and APCO began in October 2002 and continued through July 2004. A total of 17 species of amphibians and 13 reptiles have been documented thus far for APCO, 9 and 9 for BOWA, 21 and 21 for FRSP, 20 and 27 for PETE, and 23 and 21, respectively, for RICH (24 and 27, respectively, total). New county records and range extensions for several species, mostly frogs and salamanders, have been documented. Park personnel supplied information and in some cases photographs of amphibians and reptiles they encountered. Resource managers in two parks provided frozen road-killed snakes. These valuable observations provided new information on several species. **(2)** All data have been submitted and entered into NPSpecies and are in the process of being certified.
- **Scheduled FY 2006 Activities and Products**: **(1)** A no-cost extension to complete data file and report products for this project has been provided. All deliverables will be furnished by March 2006. **(2)** Field work has been completed for all five parks in this I&M project and no further activities are foreseen. **(3)** During this FY, final reports will be produced.

Task 2.6 – Fish inventories (APCO, BOWA, EISE, FRSP, GETT, HOFU, PETE, RICH, VAFO)

- **FY 2005 Accomplishments: (1)** During 2005, inventory efforts were continued and completed within BOWA and RICH by SHEN staff. The 850 meter site along Gills Creek at BOWA was sampled six times from late winter through early summer in an attempt to determine the species composition of spawning fishes from Smith Mountain Lake that migrate upstream annually through the park. Lower Beaver Dam Creek at RICH was sampled once via boat mounted electrofishing gear in cooperation with the VDGIF in an attempt to provide that park with baseline fish data from a large conservation easement that is likely to be incorporated into the park. Two new species were detected within Gill's Creek at BOWA this year including rainbow trout (the product of stocking within the drainage) and channel catfish (early summer spawning run from Smith Mountain Lake). Only one new species (bowfin) was detected within Beaver Dam Creek (RICH) this year as the result of the single visit to the park during FY2005. **(2)** Certification of fish data for all MIDN parks except BOWA was completed by James Atkinson (SHEN).
- **Scheduled FY 2006 Activities and Products**: **(1)** Revised or new park specific databases will be prepared and submitted to all parks sampled during 2005 and the most recent data will be submitted for entry into NPSpecies. Additionally, an annual progress report including data summaries and maps of sampling locations for 2005 will be completed. **(2)** Certification of BOWA fish data will be completed in 2006. **(3)** There are currently no plans for continued fish inventory work within any of the MIDN parks in FY2006 as the inventory effort is now completed.

Task 2.7 – Compilation of Historic Data for Fishes of the Northeast Region

Parks Involved: VAFO, HOFU, GETT, EISE, RICH, APCO, PETE, FRSP, BOWA

- **FY 2005 Accomplishments:** Continued effort of regional I&M and ERMN staff to develop database format to assist completion of past project with Pennsylvania State University (Dr. Jay Stauffer and Tim Stecko) to provide fish distribution, voucher and species data for PA, VA and WV parks from an earlier cooperative agreement.
- **Scheduled FY 2006 Activities and Products:** Project will be completed and final deliverables

received.

Task 2.8 – Biotic Surveys with special attention to asbestos release sites (VAFO)

- **FY 2005 Accomplishments: (1)** In October 2004 the survey work was completed, and all associated equipment and markers were removed from the field. **(2)** GPS and GIS were used to determine and store locations of survey points and transects. **(3)** All survey data were processed, analyzed, and summarized. **(4)** Draft Final Reports included "Inventory of herpetofauna and small mammals in the Asbestos Release Site Areas of Concern at Valley Forge National Historical Park", "Biotic Inventory in the Schwoebel Tract at Valley Forge National Historical Park", and "Inventory of Mammals at Valley Forge National Historical Park"
- **Scheduled FY 2006 Activities and Products**: **(1)** Oct – Dec 2005: Write second drafts of Draft Final Reports and submit to VAFO for review; write and submit Final Report. **(2)** Jan – Feb 2006: Create and submit MS Access database for final storage of survey data; submit metadata associated with spatial and survey data files; submit voucher photos.

Task 2.9 Relational database development for PA Park inventories (GETT, EISE, VAFO, HOFU)

- **FY 2005 Accomplishments**: A cooperative agreement was established with NC State to provide support for relational database development of PA parks. **(1)** Initially the goal of this project was to develop standardized natural resource databases to support management planning at VAFO. All deliverables due under the initial agreement (Supplement No. 12) were completed in FY 2003. The final report for this project was submitted in January 2004. **(2)** In September 2002, the initial agreement was amended to assist with developing standardized natural resource databases for up to six additional parks. During FY 2005, NCSU completed evaluations and metadata development for two biological inventories. The final technical report for this project was submitted in March 2005.
- **Scheduled FY 2006 Activities and Products:** No additional tasks are anticipated for FY 2006

Task 2.10 Assist cooperators with developing FGDC compliant metadata for biological inventories (All parks)

- **FY2005 Accomplishments**: Discussions among cooperators, data managers, and I&M staff in the Northeast identified the need to provide support to cooperators in developing FGDC compliant metadata for their projects. Currently in the Mid-Atlantic Network there are eight cooperators at different Universities conducting biological inventories in the Network parks. The region itself has many more. An amendment to the existing cooperative agreement with NCSU Field Technical Support Center (FTSC) was funded by all 4 networks in the region to train undergraduates at NCSU to develop FGDC compliant metadata following the biological profile. **(1)** NCSU completed the process of developing spatial and biological metadata for the Bird, Herp, and Mammal Inventory for HOFU, GETT, EISE, and VAFO conducted by Yahner. **(2)** NCSU completed the process of reviewing vegetation mapping products for HOFU and VAFO
- **Scheduled FY 2006 Activities and Products**: **(1)** Trained students will continue to directly assist Northeast Region I&M cooperators with the development of FGDC compliant metadata for all projects. **(2)** As data becomes available from other MIDN cooperators, NCSU will continue to provide technical support to review biological inventory data and create biological metadata for reviewed projects.

Task 2.11 Peer review of biological inventory work (All parks)

- **FY2004 Accomplishments**: **(1)** A cooperative agreement was amended in 2005 with Dr. Richard Yahner, Pennsylvania State University, for scientific peer review of incoming vertebrate inventory

data and reports for the Mid-Atlantic Network and some projects being conducted in the Eastern Rivers and Mountains Network parks**.** Dr. Yahner has provided peer reviews of three MIDN inventory reports.

- **Scheduled FY 2006 Activities and Products**: **(1)** Continue peer review as data and reports are submitted to the Mid-Atlantic Network from Ron Barry (mammals), Joe Mitchell (reptiles and amphibians), and Dana Bradshaw (birds).

Task 2.12 Museum collections (SHEN)

- **FY 2005 Accomplishments**: **(1)** SHEN staff initiated discussions with Virginia Museum of Natural History to determine if the museum could serve as a central repository for natural history collections. **(2)** A meeting was held in May at SHEN to evaluate current collections hosted at the park and to explore future directions.
- **Scheduled FY 2006 Activities and Products**: **(1)** Discussions will continue to establish a cooperative agreement with the museum. SHEN will serve as a pilot effort that potentially can be expanded to include other MIDN parks.

Objective 3 – Conduct investigations on species and species assemblages that are of special concern to network parks and conduct quality assurance and review of all inventory products.

Task 3.1 – Crayfish Inventory

Parks Involved: HOFU, VAFO, GETT, EISE

- **FY 2005 Accomplishments: (1)** In 2004, a cooperative agreement was established with the Pennsylvania State University to inventory crayfish species at 10 Park Service properties including four from the MIDN. Sampling was proposed at 53 stream and river sites. **(2)** In 2005, all 53 sites were surveyed. At each site, pool and riffle areas were thoroughly searched and crayfish were collected from all available habitat types. About 1,500 crayfish were collected and identified to species. The data has been entered into our Pennsylvania crayfish database.
- **Scheduled FY 2006 Activities and Products**: Data analysis and report preparation will be the focus of our 2006 activities. The emphasis of the report will be to provide the Park Service with an updated crayfish species list for each of the surveyed parks. Range extensions and exotic species will be highlighted in the report.

Task 3.2 – Weather Data Inventory

Parks Involved: EISE, GETT, HOFU, VAFO and Eastern Rivers and Mountains Network (ERMN)

- **FY 2005 Accomplishments:** (1) ERMN established a cooperative agreement with Pennsylvania State Climate Office to inventory the climate/weather data sites surrounding and within the nine parks of ERMN and the four Pennsylvania parks of MIDN.
- **Scheduled FY 2006 Activities and Products:** (1) Complete inventory along with metadata of all available sites, including those within park boundaries. (2) Refine and distribute weather data inventory to park personnel. (3) Evaluate quality, reliability, longevity and types of weather data available to the ERMN and four MIDN parks. (4) Coordinate format of metadata and evaluations with national survey work at WRCC. (5) Present in summary form the results.

Objective 4 – Conduct other baseline inventories identified as important to Network parks and the Network Vital Signs program and conduct quality assurance and review of all inventory products.

Task 4.1 – Complete vegetation sampling, classification and mapping for FRSP, RICH, BOWA, PETE, APCO

- **FY 2005 Accomplishments**: **(1)** Virginia Division of Natural Heritage (VDNH) Ecologists entered data collected during the 2004 field season into plots databases, **(2)** completed edits to the photo interpretation line work for APCO and FRSP and tagged all polygons to units in the United States National Vegetation Classification, **(3)** completed vegetation sampling and qualitative evaluation of mapping line work in PETE, RICH, and FRSP. Ten additional quantitative plots were sampled and an additional 223 observation points were collected in FRSP, PETE, and RICH. **(4)** A field key and local vegetation descriptions were completed for APCO and **(5)** a census accuracy assessment of all final mapped polygons was completed for APCO.
- **Scheduled FY 2006 Activities and Products**: **(1)** VDNH ecologists will present a progress report in December 2005. **(2)** Data collected in 2005 will be entered into the NatureServe PLOTS database. **(3)** Editing of the photo interpretation line work for PETE and RICH will be completed. **(4)** Polygons will be attributed with vegetation classifications where possible. **(5)** Local vegetation descriptions will be completed for BOWA, FRSP, PETE, and RICH and keys to the FRSP, PETE, RICH vegetation will be developed for use in map Accuracy Assessment. **(6)** Accuracy assessment for the draft vegetation maps of FRSP, RICH, and PETE will be completed. **(7)** Any fieldwork to fill data gaps in RICH and PETE will be completed.

Task 4.2 – Complete vegetation sampling, classification and mapping for HOFU, VAFO

- **FY2005 Accomplishments**: The Pennsylvania Natural Heritage Program (PNHP) **(1)** completed vegetation mapping report for HOFU. **(2)** Completed of draft vegetation mapping report for VAFO that was reviewed by NPS; final revisions are in progress.
- **FY 2006 Scheduled Activities and Products: (1)** Final vegetation mapping report for VAFO will be completed.

Task 4.3 – Complete vegetation sampling, classification and mapping for GETT and EISE

- **FY 2005 Accomplishments**: **(1)** The Pennsylvania Natural Heritage Program (PNHP) entered vegetation plot data from EISE and GETT into the PLOTS database and sent to NatureServe for cross-walking to the National Vegetation Classification System. **(2)** The plot data from EISE and GETT were analyzed using several multivariate statistical analyses, resulting in vegetation community descriptions and vegetation community dichotomous keys for both parks. **(3)** Thematic accuracy assessment sampling of the vegetation maps was completed at EISE and GETT.
- **Scheduled FY 2006 Activities and Products**: **(1)** Accuracy assessment analysis will be completed EISE and GETT. **(2)** Final vegetation mapping reports will be completed for EISE and GETT.

Task 4.4 – Vegetation Crosswalk work with VADNH and PNHP

- **FY 2005 Accomplishments**: **(1)** APCO: Partner VADNH delivered draft descriptions of map units to NatureServe; Leslie Sneddon developed a key and delivered it to VADNH for use in accuracy assessment. **(2)** BOWA, FRSP, PETE, RICH: no activity **(3)** GETT, EISE: Partner PNPH delivered draft descriptions of map units to NatureServe; NatureServe (NS) ecologist Ery Largay initiated work on the NVC crosswalk, to be delivered to PNPH in November. **(4)** HOFU: no activity; project completed. **(5)**VAFO: NatureServe submitted a proposal as requested from John Karish to research and describe desired future condition of two forest types.
- **Scheduled FY 2006 Activities and Products**: **(1)** APCO: VADNH will complete data analysis for all seven parks simultaneously in the following fiscal year, and at that time, final NVC units, local descriptions, and global descriptions will be completed. **(2)** BOWA: As this park was a census, no accuracy assessment will be performed by VADNH, and a key is not needed until final deliverables are due. **(3)** FRSP, PETE, RICH: VADNH will deliver draft descriptions of map units. NatureServe ecologist Leslie Sneddon will develop keys for these parks and deliver them to

VADNH prior to field season. **(4)** GETT, EISE: NatureServe will complete the NVC crosswalk and confer with PNHP on the final list of types. NatureServe data manager Mary Russo will deliver an editing document report from Biotics to PNHP. Upon receipt of park-specific descriptions, NatureServe will update global descriptions as appropriate, and all new information will be incorporated into Biotics. A classification report in the proper format will be delivered to PNHP. **(5)** VAFO: Pending acceptance of proposal, a NatureServe ecologist will research historical data to the extent possible and describe the desired condition of two forest types: Interior Mid- to Late-Successional Tuliptree - Hardwood Upland Forest (a type that is not desirable in itself, so the appropriate forest type will require identification first), and Lower New England Slope Chestnut Oak Forest.

Task 4.5 Assist in the development of standards for vegetation map review and assessment (All parks)

- **FY 2005 Accomplishments**: **(1)** Final vegetation map spatial data products for HOFU were revisited and an updated final review report was submitted in March 2005. **(2)** Based on the review of the HOFU and VAFO vegetation mapping data, NCSU developed the proposed standardized procedures for reviewing I&M vegetation map data and metadata. These procedures are described in a report titled, "QA/QC Procedures for Vegetation Mapping Products", which was approved in April 2005. The procedures provide a) Minimum standards for spatial data products that should be included in a final vegetation map data set, including required data and data file format specifications, and b) standard procedures and criteria for evaluating spatial data and metadata that are part of a final vegetation map data set. **(3)** Completed a preliminary review of vegetation map spatial data products for VAFO and submitted a preliminary report to NPS personnel and the cooperator in July 2004. Final review of those products is still on hold pending receipt of responses from the cooperator (following completion of the 2005 field season).
- **Scheduled FY 2006 Activities and Products**: The map review and assessment standards will continue to be used as mapping products are completed for the MIDN.

Task 4.6 Inventory Paleontological Resources (All Parks)

- **FY 2005 Accomplishments:** The planned paleontological inventory for MIDN was initiated in 2005.
- **Scheduled FY 2006 Activities and Products:** The inventory of paleontological resources will be completed for network parks by Vincent Santucci with support from Geologic Resources Division.

Task 4.7 Inventory Geological Resources (All Parks)

- **FY 2005 Accomplishments: (1)** A scoping meeting was conducted by Geological Resources Division (GRD) for parks in VA, including the five MIDN parks, APCO, BOWA, FRSP, PETE, and RICH as part of the Geologic Resources Evaluation. In collaboration with USGS staff, current geologic maps and resources were evaluated. **(2)** A scoping meeting was held by GRD for SHEN.
- **Scheduled FY 2006 Activities and Products:** GRD will continue to compile information for final reports.

B. Vital Signs Monitoring

Objective 5-Hire and retain professional staff and provide a safe, healthy, and productive work environment.

Task 5.1 – Hire Network Coordinator and Data Manager
Parks Involved: ALL

- **FY 2005 Accomplishments: (1)** The network coordinator was hired in FY 2004. **(2)** The MIDN Network Data Manager position was advertised. Kristina Callahan was hired and started as Data Manager in May 2005. **(3)** A Cooperative Agreement with North Carolina State provided data management support during the absence of a network Data Manager.
- **Scheduled FY 2006 Activities and Products:** No further hiring is anticipated in the coming year.

OBJECTIVE 6 - Develop and maintain working and decision-making processes that engage the Board of Directors, Science Advisory Committee, technical staff, and managers of Network parks.

Task 6.1 – Board of Directors and Network Charter
Parks Involved: ALL

- **FY2005 Accomplishments: (1)** A network Board of Directors meeting was held via conference call in November 2004 to review 2004 progress, discuss hiring of the data manager, and approve the FY 2005 work plan. **(2)** An amendment was made to the Network Charter to designate the Network Coordinator as the Point of Contact for NPSpecies.
- **Scheduled FY 2006 Activities and Products: (1)** Board of Directors to meet in November or December to review 2005 progress, discuss hiring and funding, and approve FY 2006 work plan.

Task 6.2 – Science Advisory Committee
Parks Involved: ALL

- **FY2005 Accomplishments: (1)** The Science Advisory Committee (SAC) was formed, and is composed of the NER Chief Scientist, Regional Coordinator, and nine other members who are familiar with the network resources and management issues. In addition, a rotating panel of park resource managers represent the MIDN Pennsylvania and Virginia parks, respectively, and the SHEN Prototype. **(2)** A SAC meeting was held in July 2005 to review the direction and products of the MIDN. **(3)** The SAC provided feedback on the review of the MIDN Phase 1 report prior to submission on September 30, 2005.
- **Scheduled FY 2006 Activities and Products: (1)** A SAC meeting will be held in the fall to define direction and approach to selecting MIDN vital signs. **(2)** SAC members will be actively involved in coordinating products for the vital signs selection workshop and assisting in managing the meeting. **(3)** SAC members will assist the network in evaluating the outcome of the vital signs selection meeting and identifying priority vital signs to monitor.

Task 6.3 – Site Visits with Natural Resource Staff
Parks Involved: ALL

- **FY2005 Accomplishments: (1)** Network Coordinator and Data Manager conducted site visits to selected MIDN parks to follow up on issues and threats, current projects, and potential vital signs. **(2)** Parks provided information including resource management plans, strategic plans, general management plans and other planning documents that help identify goals and objectives for natural resource management. **(3)** Carolyn Davis, NNL Coordinator, is currently assisting the network to compile park information. **(4)** The network completed park profiles that provide an overview of each park, legislation and mandates, natural resources, management issues, and monitoring

programs. This profile highlights natural resource issues that are important to each network park and was reviewed and approved by park resource staff.
- **Scheduled FY 2006 Activities and Products: (1)** Additional site visits and consultation with Natural Resource staff will be conducted by the Network Coordinator and Data Manager as needed.

Task 6.4 – Develop Web Page for the Network
- **FY2005 Accomplishments: (1)** The MIDN website was maintained by the Network Coordinator and Data Manager. **(2)** The site continues to be populated with reports and program updates on a regular basis. **(3)** URI cooperators provided maintenance as requested.
- **Scheduled FY 2006 Activities and Products: (1)** Additional reports and data will be integrated into the website. **(2)** Maintenance for the site will be provided by the data manager.

Task 6.5 - Contribute to General Management Planning
- **FY2005 Accomplishments**: **(1)** VAFO GMP process continues to be augmented by I&M data. **(2)** Network Coordinator worked with VAFO staff to provide scientific support for the vegetation management plan. **(3)** A project has been initiated through NatureServe to define desired future conditions for two forest types at VAFO – Interior Mid- to Late-Successional Tuliptree - Hardwood Upland Forest (a type that is not desirable in itself, so the appropriate forest type will require identification first), and Lower New England Slope Chestnut Oak Forest.
- **Scheduled FY 2006 Activities and Products: (1)** Northeast Region I&M staff will continue to assist park resource managers as information becomes available to identify and review existing natural resource studies and data sets for network parks; analyze, consolidate and synthesize this information to identify the natural resource characteristics and conditions in the context of each park's purpose and mission; identify issues and opportunities that should be addressed during the GMP process; identify critical gaps in the knowledge base which must be addressed prior to initiating the planning process; identify usable natural resource data to better inform the GMP process; present the results of this work to park planners and managers in a way that is understandable and useable in the park planning and management process(s); and identify a cadre of knowledgeable natural resource professionals that would continue in an advisory role during each park's planning process. **(2)** VAFO: a NatureServe ecologist will research historical data to the extent possible and describe the desired condition of two forest types.

OBJECTIVE 7 - Develop, implement, and maintain a Network data management program. (Note: this objective is placed under Vital Signs monitoring, however, it is equally important and integrated with the Biological Inventories portion of the program.).

Task 7.1 – GIS and Data Management Assistance
- **FY 2005 Accomplishments:** As part of the cooperative agreement with NC State for data management assistance in the Northeast Region Inventory and Monitoring (I&M) Program, NCSU work with cooperators and contractors to assure that natural resource inventory data are georeferenced according to national standards and are spatially consistent with GIS data for the corresponding park(s). Specifically, for inventories they: **(1)** review tabular and spatial data for completeness, internal consistency, and consistency with the final report and other spatial data available for the parks, **(2)** Create Federal Geographic Data Committee (FGDC) compliant biological metadata for the tabular data, **(3)** contact the Network Data Manager and/or investigator(s) to resolve discrepancies and/or obtain missing data and correct errors and omissions in the tabular and/or spatial data, **(4)** convert tabular data to MS Access, create look-up tables, and write field definitions for each table; and **(5)** correct or create georeferenced spatial data and

accompanying FGDC compliant metadata. In addition, NCSU provided support to all MIDN parks and the Network Coordinator with GIS and data management, and will compile and distribute base GIS data for the network – scheduled for FY2006.

- **Scheduled FY 2006 Activities and Products: (1)** NC State will continue to provide research support to biological inventory projects in the MIDN and the region, that will include: Verifying that each scientist is working with the appropriate GIS base data; reviewing tabular data from each project for compatibility with the national data structure following the Natural Resource Database Template and assisting with soliciting any missing information; assisting each scientist to assure that all information necessary for completing fully compliant metadata is available and taking a lead role in constructing metadata records; and constructing the appropriate NPS Dataset Catalog records and Microsoft Word formatted data dictionaries for each project**. (2)** NC State will develop distribution procedures and distribute base GIS data for the MIDN in FY2006. At a minimum, base GIS data will include the following layers, in their latest and highest available resolution, with FGDC compliant metadata: 1. Park Boundary, 2. Digital Ortho Quarter Quadrangles (DOQQ's) in MrSID format, 3. Digital Elevation Models (DEM's), 4. Digital Raster Graphics (DRG's) in MrSID format, 5. All available vector base data (roads, trails, hydro, contours, facilities, shorelines, etc.).

Task7.2-Relational database development for park inventories

- **FY 2005 Accomplishments: (1)** NCSU converted existing inventory data to relational access databases and assisted cooperators in developing FGDC compliant metadata following the biological profile.
- **Scheduled FY 2006 Activities and Products: (1)** Continue to locate any significant data sources and convert existing inventory data to relational access databases. **(2)** Provide Access databases to parks as needed.

Task 7.3-Archive data sets and reports

- **FY 2005 Accomplishments**: North Carolina State University **(1)** developed, refined, and implemented procedures for cataloging and archiving I&M data, **(2)** developed and implemented a system for cataloging hard copy aerial photography and associated information and for tracking the location and individual to whom air photos have been checked out. **(3)** For digital data, developed an online data delivery service using Oracle and ArcSDE.
- **Scheduled FY 2006 Activities and Products:** NC State will **(1)** complete the task of posting digital orthophoto mosaics and vegetation/fire fuel databases to the ArcSDE server to facilitate access by NPS personnel. **(2)** Work with Network Data Managers to complete the air photo archive for additional parks. **(3)** Continue to catalog, archive, and/or track, NER I&M Program data, as needed.

OBJECTIVE 8 -Summarize existing data, identify, and prioritize all indicators, then develop protocols and implement programs to monitor the Vital Signs.

Task 8.1-Summarize Existing Data and Identify Potential Indicators.

- **FY 2005 Accomplishments: (1)** The Network Coordinator held informal and formal meetings with Park resources managers and cooperators involved with natural resource management within network parks. **(2)** Carolyn Davis, National Natural Landscapes Coordinator, assisted the network to summarize enabling legislation, existing monitoring programs, important natural resources, and ecologically significant "stressors" that have the potential to impact natural resources within network parks. A park profile document was prepared as part of the Phase 1 report. **(3)** The Coordinator compiled additional information on existing and historic monitoring inside and outside

the park boundaries of relevance to the network. **(4)** Developed a draft list of vital signs that will be used as the basis for the vital signs selection.

- **Scheduled FY 2006 Activities and Products:** In 2006, the network will focus on Phase 2 of the monitoring plan which aims to identify, select, and prioritize vital signs that will form the basis of the protocol development and subsequent monitoring program implementation. **(1)** Continue to gather information and evaluate important natural resource issues at network parks by meeting with park resource managers, cooperators and other stakeholders. **(2)** Develop list of vital signs and potential measures for vital signs selection meeting. **(3)** Continue to compile existing data on monitoring by NPS and other organizations. **(4)** Have the various reports on existing data reviewed prior to submission for Phase 2 report in October 2006.

Task 8.2-Develop Conceptual Models for Important Ecosystems.

- **FY 2005 Accomplishments: (1)** With SHEN staff, coordinated a conceptual model development workshop at Shenandoah NP. **(2)** Developed conceptual models for network terrestrial and aquatic ecosystems, identified relationships between potential indicators, stressors and agents of change.
- **Scheduled FY 2006 Activities and Products: (1)** Work with SHEN staff to draft specific conceptual models for Shenandoah NP ecosystems. **(2)** Refine conceptual models developed for MIDN as part of Phase 1 and create link to SHEN conceptual models.

Task 8.3-Coordinate the network vital signs selection workshop.

- **FY 2005 Accomplishments: (1)** In anticipation for the vital signs selection workshop, the network developed a draft list of potential vital signs which have been distributed to the SAC and presented as part of the Phase 1 report. **(2)** An initial list of participants for the meeting was compiled.
- **Scheduled FY 2006 Activities and Products:** the MIDN will organize and host the vital signs selection meeting, and will include the following steps: **(1)** organize meeting location logistics, **(2)** prepare all relevant materials for the meeting, **(2)** identify and invite subject matter experts, **(4)** coordinate and capture information during the meeting, **(5)** summarize and report on the outcome of the meeting, and **(6)** present the finding as part of the Phase 2 report.

Task 8.4- Evaluate grassland and shrubland bird communities in cultural landscapes and develop a monitoring framework.

- **FY 2005 Accomplishments:** As part of a study involving parks from three networks, this project explored the potential for battlefields or other "cultural" parks to maintain habitats supporting important breeding grassland bird communities. Bruce Peterjohn from the USGS Patuxent Wildlife Research Center conducted intensive inventories of these parks during the summer of 2005 to establish the composition of the grassland bird communities currently occurring in these parks. **(1)** Existing grassland habitats and land use management practices were also noted to identify opportunities for improving grassland habitats within the context provided by the park's mandated cultural focus. Preliminary findings indicate that grasslands currently managed for grassland birds support substantial populations of a few species, while fields managed for agricultural purposes generally support depauperate grassland bird communities. **(2)** A conceptual ecological model for the management of grassland birds in cultural parks was developed, providing a general ecological framework for making future decisions concerning for managing grassland bird communities in these cultural parks.
- **Scheduled FY 2006 Activities and Products: (1)** Final reports from this phase of the study will be completed by the winter of 2005/2006. **(2)** A conceptual ecological model for managing shrubland birds in cultural parks is in preparation. **(3)** Park-specific reports summarizing the results of data collected during 2005 and making recommendations for improving management activities for the benefit of grassland birds will also be prepared.

Task 8.4- Evaluate ecological indicators and methods for assessing wetland integrity

- **FY 2005 Accomplishments:** Through a cooperative agreement with the Leetown Science Center, USGS, a study has been developed to determine **(1)** reference or desired conditions for different wetland types, **(2)** ecological indicators that best characterize the ecological integrity of different wetland types, and **(3)** the major threats to wetlands and how impacts be identified using rapid ecological assessment methods. In 2005, discussions and initial scoping was conducted to identify the parks that would be used to implement field activities in 2006.
- **Scheduled FY 2006 Activities and Products: (1)** March 2006: report outlining site selection and watershed characterization, along with a review of available literature used to define the reference condition for the wetland type sampled, **(2)** field activities will be conducted in spring and summer of 2006.

OBJECTIVE 9 - Integrate water quality monitoring in the Network Vital Signs monitoring plan.

Task 9.1-Summarize existing data

- **FY 2005 Accomplishments:** As part of a cooperative agreement with the University of Virginia, a report was prepared that **(1)** compiled information on state-identified "impaired" (305b and 303d-listed) waters within network parks, **(2)** compiled information on state-identified outstanding waters, or special protection waters, **(3)** compiled information on other water bodies in the network not officially recognized as such, but that are thought to be both pristine and ecologically highly significant at the park or Network scale, and **(4)** identified ecologically significant "stressors" that have the potential to impact water quality within network parks. The information was presented as part of the Phase 1 report for the MIDN.
- **Scheduled FY 2006 Activities and Products: (1)** the report will be revised based on feedback from review, and **(2)** data from the scoping report will be compiled and archived by the network.

Task 9.2- Identify and acquire published resources on water quality monitoring

- **FY 2005 Accomplishments: (1)** Reviewed work of other networks in integrating water quality into vital signs. **(2)** Reviewed water quality by other agencies to evaluate applicability to NPS vital signs monitoring.
- **Scheduled FY 2006 Activities and Products:** the network will continue to **(1)** identify and acquire published resources on water quality monitoring, **(2)** review the material to define the best approach for water quality monitoring in the MIDN.

Task 9.3-Technical Evaluation of existing Water Quality Monitoring Programs

- **FY 2005 Accomplishments:** The network and cooperators worked with Park Staff to conduct **(1)** data mining and database review activities to determine the status of active and historic water quality monitoring within the parks of MIDN, **(2)** began compiling existing water quality data, and began an analysis of the adequacy of current monitoring (by NPS or others), **(3)** evaluated existing water quality monitoring programs (NPS or other).
- **Scheduled FY 2006 Activities and Products:** additional information will continue to be compiled and used to develop a monitoring program for MIDN.

III. Staffing

Inventory and Monitoring Staff
John Karish, Chief Scientist
Elizabeth Johnson, Northeast Region I&M Coordinator

Jim Comiskey, Mid-Atlantic Network Coordinator
Kristina Callahan, Mid-Atlantic Network Data Manager
Jennifer Keefer, Research Associate, PSU
Scott Tiffney, Research Associate, PSU
Sara Stevens, Northeast Coastal and Barrier Network Data Manager
Carolyn Davis, NNL Program Coordinator

Board of Directors
Russ Smith – Chair (Superintendent – FRSP)
Reed Johnson (Superintendent – APCO)
Rebecca Harriett (Superintendent – BOWA)
John Latschar (Superintendent – EISE and GETT)
Bill Sanders (Superintendent – HOFU)
Bob Kirby (Superintendent – PETE)
Cynthia MacLeod (Superintendent – RICH)
Chas Cartwright (Superintendent – SHEN)
Mike Caldwell (Superintendent – VAFO)
John Karish (Chief Scientist NER)
Elizabeth Johnson (Northeast Region I&M Coordinator)
Jim Comiskey (Mid-Atlantic Network Coordinator)

Science Advisory Committee
Alan Ellsworth (NPS, Hydrologists)
Gary Fleming (VA Natural Heritage Program, Vegetation ecologist)
Paul Geissler (USGS, Statistical ecologist)
Elizabeth Johnson (NPS, Regional Coordinator)
John Karish (NPS, Chief Scientist)
Carolyn Mahan (Pennsylvania State University, Community ecologist)
Karen Patterson (VA Natural Heritage Program, Vegetation ecologist)
Craig Snyder (USGS, Aquatic ecology)
Julie Thomas (NPS, Air quality)
John Young (USGS, Landscape ecologist)
James Comiskey (NPS, Network Coordinator)
Kristina Callahan (NPS, Data Manager)

Ad-hoc SAC members
Kristen Allen (RICH Resource Manager)
Zachary Bolitho (GETT Resource Manager)
Gordon Olson (SHEN Resource Branch Chief)
Gregg Kneipp (FRSP Resource Manager)

Mid-Atlantic Network Cooperators
Frostburg State University – Dr. Ron Barry
Virginia Commonwealth University – Dr. John Pagels
College of William and Mary, Center for Conservation Biology – Dr. Dana Bradshaw
University of Richmond – Dr. Joe Mitchell
West Chester University – Dr. Harry Tiebout III
James Atkinson and the SHEN fish crew
Alan Williams (fish data management)

North Carolina State University, Field Technical Support Center – Dr. Hugh Devine
NatureServe – Lesley Sneddon
VA Department of Natural Resources (Heritage program) – Chris Ludwig and Karen Patterson
PA Natural Heritage Program – Greg Podniesinski and Stephanie Perles
PA Natural Heritage Program – Jim Hart
University of Rhode Island, Environmental Data Center – Dennis Skidds
Tonnie Maniero – NPS ARD
Vincent Santucci – NPS
Pennsylvania State University – Dr. Richard Yahner and Brad Ross
Pennsylvania State University – Dr. Jay Stauffer and Tim Stecko
Pennsylvania State University – Dr. Bob Carline and Dave Lieb
USGS, Patuxent Wildlife Research Center – Dr. Bruce Peterjohn
USGS, Leetown Science Center – Dr. Paul McCormick
University of Virginia, Department of Environmental Sciences – Dr. James Webb and Frank Deviney

IV. Reports, Publications and Presentations

Reports

Atkinson, James B. 2005. Fish Inventories of Mid-Atlantic and Northeast Coastal and Barrier Network Parks within Virginia, Maryland and Pennsylvania. 2004 Annual Report. Natural Resources Branch; Division of Natural and Cultural Resources; Shenandoah National Park; 55 p.

Barry, R. E. 2005. Mammal Surveys at George Washington Birthplace National Monument, Thomas Stone National Historic Site, Colonial National Historical Park, Richmond National Battlefield Park, and Fredericksburg and Spotsylvania County Memorial National Military Park. Progress Report for Cooperative Agreement No. 1443DCA309701200, Task Order No. T-3097-01-300 of the Chesapeake Watershed Cooperative Ecosystem Studies Unit. January 2005.

Comiskey, James A., Kristina K. Callahan, Carolyn M. Davis. 2005. Mid-Atlantic Network Vitals Signs Monitoring Plan: Phase One. Inventory and Monitoring Program, National Park Service. Fredericksburg, Virginia.

Devine, Hugh A. and Kristina Callahan. March 2005. Preliminary Development of a Natural Resource Data Base to Support General Management Planning at Valley Forge National Historical Park, Final Technical Report (Amendment No. 1 to Supplemental Agreement No. 12 to Cooperative Agreement 4000-7-9003) North Carolina State University, Raleigh, NC.

Devine, Hugh A. and William A. Millinor. February 2005. Geospatial Vegetation Data Development for Selected National Parks, Final Technical Report (29pp.) (Supplemental Agreement 10 to Cooperative Agreement 4000-7-9003) North Carolina State University, Raleigh, NC.

Millinor, William. March 2005. Digital Orthophoto Mosaic for Hopewell Furnace National Historic Site (Technical report, 5pp.) North Carolina State University, Raleigh, NC.

Millinor, William. September 2005. Digital Orthophoto Mosaics for Gettysburg National Military Park and Eisenhower National Historic Site (Technical report, 7pp.) North Carolina State University, Raleigh, NC.

Millinor, William. September 2005. Digital Orthophoto Mosaic for Valley Forge National Historical Park (Technical report, 5pp.) North Carolina State University, Raleigh, NC.

Millinor, William A. and Hugh A. Devine. March 2005. Data Development Procedures for Digital Orthopohoto Mosaics for Pennsylvania and West Virginia National Parks: Final Technical Report (9pp.) (Task Agreement No. 004 to Cooperative Agreement 4560C0027) North Carolina State University, Raleigh, NC.

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Peterjohn, Bruce. 2005. Draft Conceptual Ecological Model for Management of Breeding Grassland Birds in the Mid-Atlantic Region. USGS Patuxent Wildlife Research Center.

Podniesinski, G. S., S. J. Perles, L. A. Sneddon, B. Millinor. March 2005. Vegetation Classification and Mapping of Hopewell Furnace National Historic Site. Technical Report NPS/NER/NRTR--2005/012. National Park Service. Philadelphia, PA.

Sneddon, L and S. Neid. 2004. Vegetation of the Lower New England/ Northern Piedmont Ecoregion: A Key to the Types. National Vegetation Classification. NatureServe

Sneddon, L and S. Neid. 2004. Vegetation of the Chesapeake Bay Lowlands Ecoregion: A Key to the Types. National Vegetation Classification. NatureServe

Sneddon, L and S. Neid. 2004. Vegetation of the North Atlantic Coast Ecoregion: A Key to the Types. National Vegetation Classification. NatureServe

Yahner, R. H., J. E. Kubel, and B. D. Ross. 2005. Inventory of herpetofauna and small mammals in the Asbestos Release Site Areas of Concern at Valley Forge National Historical Park. Draft Final Report, Cooperative Agreement No. 4000-8-9028, Supplemental Agreement No. 36. National Park Service. University Park, PA.

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Publications

Millinor, Bill, Hugh Devine, and Elizabeth Eastman. "Fire Fuel Mapping in the National Park Service Northeast Region." John Qu et al., eds. Earth Science Satellite Remote Sensing. New York, NY: Springer-Verlag, (In press).

Shedd, Justin M. "Updating Fire Fuel Loads and Vegetation Datasets After a Natural Disaster." In: Proceedings of EastFIRE Conference 2005, May 11-13, 2005, Fairfax, VA.

Presentations

Comiskey, James A. October 2004. "Developing a monitoring program for the Mid-Atlantic Network of the National Park Service." Presentation at Mary Washington University. Fredericksburg, VA.

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Comiskey, James A. March 2005. "The extent of the invasive exotic challenge to National Parks: What's on the menu to protect?" Presentation at the George Wright Society Conference. Philadelphia, PA.

Comiskey, James A. May 2005. "The National Park Service Inventory and Monitoring Program." Presentation at the USGS Appalachian Workshop: Understanding the Appalachians: Meeting Strategic Management Needs by Developing Research and Partnership Opportunities. Herndon, VA.

Comiskey, James A. May 2005. "The National Park Service Inventory and Monitoring Program: Developing a monitoring plan for the Mid-Atlantic Network" Presentation at the Smithsonian Institution, Biodiversity Monitoring Training Course. Front Royal, VA.

Comiskey, James A. May 2005. "Forest dynamics: biological data analysis and ordination techniques." Presentation at the Smithsonian Institution, Biodiversity Monitoring Training Course. Front Royal, VA.

Devine, Hugh A. June 2, 2005. "An Enterprise GIS Design for Northeastern National Parks." Presentation at 2005 Northeast Region GIS Annual Meeting, Pennsylvania State University, University Park, PA.

Devine, Hugh A. August 11,2005. "Enterprise GIS Model for Park Management in the Northeast Region." Presentation at NPS National GIS Coordination Workshop, August 10-12, 2005, Denver, CO.

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Devine, Hugh A. August 12, 2005. "Integrated I&M Data Model for Park Management." Presentation at I&M National Data Managers Workshop, August 12, 2005, Fort Collins, CO

Dolbeare, T., H. Warchalowski, D. Strang, A. Sareen, C. Tanner, J. Mulligan, and R. Barry. 2004. Surveys of the mammals of national parks in Maryland and Virginia. Poster presentation. Northeast Fish and Wildlife Conference 60th annual meeting, Ocean City, Maryland.

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Millinor, William A. and Hugh A. Devine. May 12, 2005. "Fire Fuel Mapping for Ten Northeast Region National Parks." Poster presentation at EastFIRE Conference 2005, May 11-13, 2005, George Mason University, Fairfax, VA.

Moore, Angela and Hugh A. Devine. (March 3, 2005) "An interactive GIS Database for Wildfire Fuel Load Plots." Presentation at 2005 North Carolina Geographic Information Systems Conference, March 3-4, 2005, Winston-Salem, NC.

Sareen, A., J. M. Mulligan, C. L. Tanner, and R. E. Barry. 2004. Inventories of the mammals of national parks in the Piedmont (mid-Atlantic) region of Virginia. Poster presentation. American Society of Mammalogists 84th annual meeting, Humboldt State University, Arcata, California.

Shedd, Justin M. May 12, 2005. "Updating Fire Fuel Loads and Vegetation Datasets After a Natural Disaster." Presentation at EastFIRE Conference 2005, May 11-13, 2005, George Mason University, Fairfax, VA.

Shedd, Justin M. June 30, 2005. "Updating Spatial Datasets Using Geographic Information Systems and Remote Sensing Techniques." Presentation at University Consortium for Geographic Information Science, Summer Assembly, June 28-July 1, 2005, Jackson, WY.

Websites

Mid-Atlantic Network Inventory and Monitoring Program.
http://www.nature.nps.gov/im/units/midn/

Shenandoah National Park Natural Resource Inventory and Monitoring Programs.
http://www.nps.gov/shen/3a.htm

V. Status of Park Vital Signs Monitoring

Since this network includes SHEN, a prototype park, one of the 10 parks in the network has identified vital signs. The other 9 parks have completed the initial scoping and will be identifying vital signs in FY 2006. Several parks are already conducting monitoring using funds from park base and other sources as reflected in the "protocols implemented" and "analysis/synthesis available" sections.

Mid-Atlantic Network 2004	Air Quality	Water Quality	Water Quantity	Geologic Resources	Plants	Animals	Landscape Characteristics
Planning and Design							
# parks monitoring w/ NRC funding	10	10	10	10	10	10	10

# parks monitoring w/ other funding	1	6	1	1	4	10	0
Protocols Implemented							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	6	1	1	4	10	0
Analysis/Synthesis Available							
# parks monitoring w/ NRC funding	0	0	0	0	0	0	0
# parks monitoring w/ other funding	1	3	1	1	4	10	0

Note: Air (SHEN), Water Quality (SHEN, VAFO, HOFU, EISE, GETT, RICH) Water quantity (SHEN), Geologic Resources (SHEN), Plants (SHEN, VAFO, GETT, EISE), Animals (All).

VI. USGS Protocol Development and Monitoring-Related Research Needs

The Mid-Atlantic Network can use assistance from USGS in

- Review of vegetation mapping products.
- Review of conceptual models to assist in identifying vital signs for each park and for the network.
- Monitoring planning and design and spatial sampling design in FY 2006 and FY 2007.
- Developing quantitative models of ecosystem health from vegetation mapping products.

VII. Budget

In FY2005, the MIDN received $323,978 in funding, including monitoring ($262,412), vegetation mapping ($18,000), and water quality monitoring ($44,000). Water quality funds were subject to a 1% assessment by WRD, while all funds were subject to a 2% regional assessment. Monitoring funds were used for personnel, office expenses, equipment and supplies, travel, data management, biotic inventories, and projects to help identify potential vital signs for the network. Vegetation mapping funds were allocated to complete accuracy assessments at SHEN. Water quality funding allowed the network to conduct an initial scoping of water resources and conditions in the network parks.

We anticipate the authorization of $301,200 for vital signs monitoring and $44,000 for water quality monitoring in FY 2006. These funds will be used for personnel, travel, supplies and equipment, support for the office at FRSP, and for hosting the network vital signs selection meeting. The MIDN will continue to receive assistance from Pennsylvania State University in compiling bibliographic citations in NatureBib, and in certifying and submitting data to NPSpecies. With SHEN, we are looking to support the Virginia Museum of Natural History as a central repository of natural history collections for the network. Funding will also be allocated to complete the Paleontological inventory for the network. In addition, we will fund the University of Virginia to continue the process in developing the water quality monitoring plan. Funds will be subject to a 1% regional assessment.

A summary of our FY2005 expenditures and FY2006 budget plans is provided on the following pages.

Budget Summary

FY05 Admin Report Network: 30 Mid-Atlantic

Category: 1_Income

Description	$ Amount	$$ Source	Where $ Went	Comments
Regional Coord. COL increase	$250.00	I&M - VS Monitoring $$		
VAFO Define Vegetation future conditions	$6,000.00	I&M - VS Monitoring $$		
MIDN Monitoring	$225,000.00	I&M - VS Monitoring $$		
MIDN Monitoring COL increase	$100.00	I&M - VS Monitoring $$		
MIDN Water Quality	$44,000.00	WRD - WQ Monitoring		
SHEN Vegetation mapping	$18,000.00	Veg. Mapping Program		
WRD Assessment (1%) Water Quality	($434.00)	WRD - WQ Monitoring		
1/4 Regional Coord. 2144-NII account	$31,062.00	I&M - VS Monitoring $$		
Subtotal	*$323,978.00*			

Category: 2_Personnel

Description	$ Amount	$$ Source	Where $ Went	Comments
SHEN Veg map SCA (Dever)	$2,697.00	Veg. Mapping Program	NPS	
Regional Coordinator 2144-NII	$27,000.00	I&M - VS Monitoring $$	NPS	
Network Coordinator (Comiskey)	$93,756.43	I&M - VS Monitoring $$	NPS	
Data Manager (Callahan)	$21,468.89	I&M - VS Monitoring $$	NPS	
SHEN Veg map Tech (Cohen)	$6,381.46	Veg. Mapping Program	NPS	
SHEN Veg map Tech (Fisichelli)	$3,442.34	Veg. Mapping Program	NPS	
Subtotal	*$154,746.12*			

Category: 3_Coop. Agreements

Description	$ Amount	$$ Source	Where $ Went	Comments
NC State Data archival	$10,000.00	I&M - VS Monitoring $$	Univ_Non-CESU	
University of Virginia (Galloway)	$41,653.00	WRD - WQ Monitoring	Univ_Non-CESU	
VAFO Forest Conditions	$8,760.00	I&M - VS Monitoring $$	Other non-Federal	
Frostburg State University (Barry)	$4,198.58	I&M - VS Monitoring $$	University-CESU	
Penn State University - NatureBib (Tiffney)	$13,120.00	I&M - VS Monitoring $$	Univ_Non-CESU	
Penn State University - NPSpecies (Keefer)	$20,984.00	I&M - VS Monitoring $$	Univ_Non-CESU	

USGS Leetown WV (McCormick)	$22,947.00	I&M - VS Monitoring $$	Other Federal	
VA DCR	$1,000.00	Veg. Mapping Program	Other non-Federal	
USGS Leetown WV	$2,000.00	Veg. Mapping Program	Other Federal	
Subtotal	*$124,662.58*			

Category: 4_Contracts

Description	$ Amount	$$ Source	Where $ Went	Comments
PCS Move (Callahan)	$3,023.95	I&M - VS Monitoring $$	Other non-Federal	
PCS Move (Mitchell)	$1,862.57	I&M - VS Monitoring $$	Other non-Federal	To be repaid by NETN
Report formatting (Hill)	$2,500.00	I&M - VS Monitoring $$	Other non-Federal	
Subtotal	*$7,386.52*			

Category: 5_Operations/Equipment

Description	$ Amount	$$ Source	Where $ Went	Comments
Water Quality Supplies and Equipment	$1,479.00	WRD - WQ Monitoring	Other non-Federal	
Supplies and Equipment	$13,115.02	I&M - VS Monitoring $$	Other non-Federal	
SHEN Veg map vehicle and mileage	$1,000.00	Veg. Mapping Program	NPS	
FRSP Office - utilities, communications, internet	$8,800.00	I&M - VS Monitoring $$	Other non-Federal	
SHEN Veg map supplies and equipment	$350.00	Veg. Mapping Program	NPS	
SHEN Veg map miscellaneous	$929.20	Veg. Mapping Program	NPS	
Subtotal	*$25,673.22*			

Category: 6_Travel

Description	$ Amount	$$ Source	Where $ Went	Comments
Training and Travel	$7,092.56	I&M - VS Monitoring $$	Other non-Federal	
Travel Regional Coordinator 2144-NII	$1,250.00	I&M - VS Monitoring $$	Other non-Federal	
Subtotal	*$8,342.56*			

Category: 7_Other

Description	$ Amount	$$ Source	Where $ Went	Comments
Regional Assessment (1%) Regional Coord 2114-NII Account	$302.00	I&M - VS Monitoring $$	NPS	
Regional Assessment (1%) Monitoring funds	$2,231.00	I&M - VS Monitoring $$	NPS	
Regional Assessment (1%) Water Quality funds	$434.00	WRD - WQ Monitoring	NPS	
Regional Assessment (1%) SHEN Vegetation mapping funds	$200.00	Veg. Mapping Program	NPS	
Subtotal	*$3,167.00*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - VS Monitoring $$	$262,412	$146,008		$22,947	$4,199	$44,104	$45,154
Veg. Mapping Program	$18,000	$15,000		$2,000			$1,000
WRD - WQ Monitoring	$43,566	$434				$41,653	$1,479
Totals	$323,978	$161,442		$24,947	$4,199	$85,757	$47,633

Analysis of Expenses by Category

Funding Source	Total $$	Personnel	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - VS Monitoring $$	$262,412	$142,225	$80,010	$7,387	$21,915	$8,343	$2,533
Veg. Mapping Program	$18,000	$12,521	$3,000		$2,279		$200
WRD - WQ Monitoring	$43,566		$41,653		$1,479		$434
Totals	$323,978	$154,746	$124,663	$7,387	$25,673	$8,343	$3,167

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$154,746	47.76%
3_Coop. Agreements	$124,663	38.48%
4_Contracts	$7,387	2.28%
5_Operations/Equipment	$25,673	7.92%
6_Travel	$8,343	2.58%
7_Other	$3,167	0.98%
	$323,978	

Budget Summary

FY06 Work Plan Network: 30 Mid-Atlantic

Category: 1_Income

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
MIDN Monitoring	$301,100.00	I&M - VS Monitoring $$		
MIDN Salary Increase	$100.00	I&M - VS Monitoring $$		
Water Quality	$44,000.00	WRD - WQ Monitoring		
1/4 Regional Coordinator account 2144-NII	$30,000.00	I&M - VS Monitoring $$		
Subtotal	*$375,200.00*			

Category: 2_Personnel

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
1/4 Regional Coordinator account 2144-NII	$28,700.00	I&M - VS Monitoring $$	NPS	
Network coordinator	$100,000.00	I&M - VS Monitoring $$	NPS	
Data Manager	$65,000.00	I&M - VS Monitoring $$	NPS	
Subtotal	*$193,700.00*			

Category: 3_Coop. Agreements

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Water Quality monitoring plan (U of VA)	$43,566.00	WRD - WQ Monitoring	Univ_Non-CESU	
Penn State University - NatureBib (Tiffney)	$15,000.00	I&M - VS Monitoring $$	Univ_Non-CESU	
Penn State University - NPSpecies (Keefer)	$22,000.00	I&M - VS Monitoring $$	Univ_Non-CESU	
Paleontology Report	$5,000.00	I&M - VS Monitoring $$	NPS	
Vital Signs Selection workshop - Objectives, preparation, materials	$30,000.00	I&M - VS Monitoring $$	Other non-Federal	
VA Museum of Natural History	$7,000.00	I&M - VS Monitoring $$	Univ_Non-CESU	
Subtotal	*$122,566.00*			

Category: 5_Operations/Equipme

Description	*$ Amount*	*$$ Source*	*Where $ Went*	*Comments*
Equipment and supplies	$19,188.00	I&M - VS Monitoring $$	Other non-Federal	
FRSP Office - Utilities, communications, internet	$10,000.00	I&M - VS Monitoring $$	Other non-Federal	
Subtotal	*$29,188.00*			

Category: 6_Travel

Description	$ Amount	$$ Source	Where $ Went	Comments
1/4 Regional Coordinator account 2144-NII	$1,000.00	I&M - VS Monitoring $$	Other non-Federal	
MIDN network travel	$10,000.00	I&M - VS Monitoring $$	Other non-Federal	
Travel for Vital Signs Selection workshop	$15,000.00	I&M - VS Monitoring $$	Other non-Federal	
Subtotal	*$26,000.00*			

Category: 7_Other

Description	$ Amount	$$ Source	Where $ Went	Comments
Regional Assessment (1%) Water Quality funds	$434.00	WRD - WQ Monitoring	NPS	
Regional Assessment (1%) Salary increase	$1.00	I&M - VS Monitoring $$	NPS	
Regional Assessment (1%) Monitoring funds	$3,011.00	I&M - VS Monitoring $$	NPS	
Regional Assessment (1%) Regional Coord 2114-NII Account	$300.00	I&M - VS Monitoring $$	NPS	
Subtotal	*$3,746.00*			

Budget Analysis

Analysis of Expenses by Where $ Went

Funding Source	Total $$	NPS	USGS	Other Federal	Univ.-CESU	Univ_Non-CESU	Other non-Federal
I&M - VS Monitoring $$	$331,200	$202,012				$44,000	$85,188
WRD - WQ Monitoring	$44,000	$434				$43,566	
Totals	$375,200	$202,446				$87,566	$85,188

Analysis of Expenses by Category

Funding Source	Total $$	Personnel	Coop Agree.	Contracts	Operations/Equip.	Travel	Other
I&M - VS Monitoring $$	$331,200	$193,700	$79,000		$29,188	$26,000	$3,312
WRD - WQ Monitoring	$44,000		$43,566				$434
Totals	$375,200	$193,700	$122,566		$29,188	$26,000	$3,746

Expense Totals By Category

Category	SubTotal	Percent
2_Personnel	$193,700	51.63%
3_Coop. Agreements	$122,566	32.67%
5_Operations/Equipment	$29,188	7.78%
6_Travel	$26,000	6.93%
7_Other	$3,746	1.00%
	$375,200	